



Efficient Economic Allocation of Free Capacities in Ocean Shipping and Port Management by Digital Transformation

Background

In line with present and ongoing challenges focusing on the sustainability and performance of seaports and maritime supply chains, especially related to digitalization, automation, ship size development, innovation capability as well as handling of hinterland transportation a rethinking of communication, co-ordination and cooperation of seaport stakeholders is obvious. Efficiency improvements can be obtained using bottleneck planning by a better cooperation and coordination along the maritime driven supply chain.

Research Topic

The overall research topic is to identify, to analyze and to evaluate options for economic allocations of free capacities in ocean shipping, port management and hinterland transportation. By this, new digital service innovations will be founded and drafted as well as the consequences of their piloting will be evaluated. Moreover, new business models and cooperation arrangements will be deliberated. This research topic is divided up into different parts of the maritime driven supply chain, and is giving the chance for the researcher to focus on a specific self-defined subtheme.

Methods

The methods in use for the overall research topic are:

- design science research,
- business process modeling,
- data analytics and forecasting,
- operations research methods for transport planning and for assignment problems,
- simulation models, and
- collaborative decision making concepts.

Focus

The focus of the PhD thesis of Ms. Hapsatou is on the digitalization of information flow management in supply chains of retail companies, and by this, on the interface between port and hinterland connections to the retailer and finally to the end customer. Due to the cotutelle character of the PhD project the area under investigation is Cameroon, which highlights the digitalization discussion in developing countries.

Expected Results

Concerning the investigations and analyses expected results could be:

- Bottleneck-orientated policies for seaports as well as for maritime supply chains and hinterland connections
- Concepts for improvement of information flow management
- Insights into country-specific challenges in realizing efficiency improvements and new digital transformations
- Concepts for new digital innovations and the corresponding cloud logistics implementation
- Concepts and considerations on new digital driven business models and cooperation arrangements

New Business Models

In future process owners of today may be substituted by process owners of tomorrow. This will result in consequences on collaborative decision-making and on the operation of business models overall. The question is, in future, in line with cloud logistics who will provide the digital business models on demand and who has the data power. For example, is it still the terminal operator or could it be also the communication or data provider? And on how we can participants in logistics and supply chain management in developing countries give the chance to be part of the transformations.

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